Assessing the effects of External Sector Aggregates on Economic growth in Nigeria

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ABSTRACT

This study examined the effect of the external sector on economic growth in Nigeria. The external sector was measured using Net Exports, Exchange Rate and External Debt while the Gross Domestic Product (GDP) growth formed the basis for measuring economic growth. The data for these variables which spanned from 1981 to 2022 were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank World Development Indicators (WDI). Descriptive statistics, unit root test, bounds co-integration test method and autoregressive distributed lag (ARDL) estimation method formed the basis for data analysis. The unit root test results showed that the variables are mixed-integrated and the bounds co-integration test results showed evidence of long-run relationship among the variables in the model. The estimated ARDL showed that net export has a negative and significant effect on GDP growth in the long run. This could be attributed to the increasing level of imports compared to exports, which undermines the growth of the Nigerian economy. The results further showed that the exchange rate has a negative effect on GDP growth in both the short and long run. Although this finding is not significant at the 5% level, it highlights the adverse implications of the naira depreciation on the Nigerian economy. In addition, evidence of a negative and significant effect of external debt on GDP growth was established in both the long and short run. This highlights that the growth of external borrowings has not translated to the growth of the Nigerian economy. The error correction coefficient (-0.3757) was negative and significant at the 5% level, indicating that about 37.57% of distortions from long-run equilibrium will be adjusted each year. Given the findings, this study recommends that policymakers should ensure the expansion of the export base to deepen the net exports and create more opportunities for economic growth in Nigeria.

Key words: Net export, Exchange rate, External debt, Economic growth

Introduction

A country's economic growth does not manifest in isolation, as there exist cross-border economic and financial relationships between countries, which have a substantial impact on the country's economic growth prospects. Each country aims to ensure that it optimizes the benefits associated with these cross-border economic and financial relationships by becoming the choice destination for foreign investments. If a country does not guard against imbalances that are generally agreed to be a warning sign, the country could end up in a serious economic crisis. Although surpluses are not good and neither are deficits bad, unfavourable balances may create restrictive conditions for every economy. It is, therefore, imperative for a country to have the necessary policies in place to avoid excessive imbalances.

The external sector is one of the most important sectors in the growth and development process of any economy, be it developed or developing. This is because the external sector is a network of economic transaction a country has with other countries. An ideal external sector is one that is stable and in equilibrium over time, for this situation ensures sustainable economic growth of a country (Jhingan 2002).

Economic growth provides crucial information to government, investors, international communities and organizations both governmental and non-governmental. This information economic growth provides includes: The size of the economy, its growth rate, GDP per capita amongst others. That is why scholars and researchers have embarked on tracing the relationship between economic growth and factors that causes its success. Some of these factors are external sector aggregates. The external sector performance of any economy reflects on the economic transactions between residents and the rest of the world. This sector can be in equilibrium or disequilibrium (surplus or deficit). A deficit outcome represents a situation where receipts are insufficient to accommodate payments, while surplus reflects a situation where receipts are in excess out of payments. Anything that throws the external sector out of balance constitutes a shock and this shock could be favourable or unfavourable. Apart from the balance of payment, other major indicators of external sector performance include: exchange rate, net exports and external debt amongst others. The efficient management of these aggregates is critical in ensuring a stable balance of payment. Vibrant external sector is important to the growth of every open economy. One way the external sector impacts economic growth is through exports. Exporting goods and services can provide a source of revenue for a country and stimulate domestic production and investment. This can lead to increased job creation and economic growth. Additionally, foreign direct investment can bring in new capital and technology, which can lead to increased productivity and competitiveness. Foreign investment can also help to finance domestic infrastructure projects and other economic activities, creating additional growth opportunities. However, excessive reliance on imports or foreign borrowing can lead to balance of payment problems and high external debt, which can negatively impact economic growth. Therefore, it is important for countries to balance their external sector with their domestic policies to achieve sustainable economic growth and development.

Understanding the dynamics and effects of these external sector aggregates on economic growth is important for policymakers and researchers seeking to promote sustainable economic development.

The emergence and over dependence on oil has created a twist in the structure of Nigerian economy. The non-oil (groundnut, cotton, palm produce) export sector dropped and this changed the structure of external trade thus creating an unfavorable balance in the economy. The dependence of domestic production and consumption on the availability of foreign exchange was so high that when the price of oil collapsed in the 1980s a spiral effect was left on all sectors of the economy. Similarly, the Central Bank of Nigeria (CBN) revealed that inflation rate totaled the sum of 8.7% between 1980 and 1990. But then, it increased to 30.60% between 1991-2000. Then it drastically decreased to 15.65% between 2001 and 2015. The effect was however, a sharp rise in the external debt service burden on an economy that had significant budget financing. In the same way, fluctuations in Nigeria's currency (naira) exchange rate which is a component of the external sector variables, caused economic instability in the country between the years 2000 and 2014. The official exchange rate released by the National Bureau of Statistics (NBS) for the last quarter of 2021 stood at 448.895 naira per one dollar. It appears that the performance of the external sector variables did not translate into increase in economic growth.

> More so, it was worrisome that economic growth in Nigeria has fluctuated over the years. In 2016, Nigeria slipped into a recession following a successive quarterly decline in total output. The quarterly gross domestic product stood at -0.66 per cent and -1.487 per cent in the second and third quarter of 2016 (NBS, 2016). The fortune of the economy rose

slightly as gross domestic product rose to 0.716 percent in 2017Q1 and 1.870 per cent 2020 quarter one. Recent report on the state of the economy by the country's statistical body shows the Nigeria economy is officially in recession following negative growth of -6.104 and -3.40 per cent in the second and third quarters of 2020 (NBS, 2020). Though there has been improvement in Nigeria's GDP level going forward, economic growth has been suboptimal.

The much-awaited benefits from the external sector are yet to be seen and felt. It is based on the above state of affairs that this study raised the following questions, to what extent does net export impact on economic growth in Nigeria? What is the effect of exchange rate on economic growth in Nigeria? How does external debt affect economic growth in Nigeria? Therefore, this research examined the effects of external sector aggregates on economic growth in Nigeria. Specifically, the study examined the impact of net export on economic growth in Nigeria, assessed the effects of exchange rate on economic growth in Nigeria, ascertained the effects of external debt on economic growth in Nigeria, providing insights that could inform policy directions for enhancing economic stability and growth in the economy.

Theoretical Framework

Elasticity Theory of Balance of Payments

The elasticity approach of the balance of payment focuses on the impact of relative price on the trade balances as outlined by Husted and Michael (1995). It emphasizes the responsiveness of variables in the trade and services account, consisting of imports and exports of merchandise and services relative price changes induced by devaluation. The Marshall Learner condition, which serves as the foundation for the elasticity approach to balance of payments, states that for a devaluation to have a positive impact on a country's balance of payments, the elasticity of demand for both imports and exports must be greater than unity.

According to the elasticity approach to the balance of payments, the impact of devaluation on the trade imbalance is dependent on the elasticity of import demand and the elasticity of supply of foreign goods. Changes in domestic export revenues depend on the country's export supply elasticity as well as the country's export demand elasticity. The domestic proceeds of imported foreign items will alter in response to any change in the foreign exchange rate. The devaluation of the Nigerian naira is expected to have a negative impact on domestic demand for imported goods while having a positive impact on global demand. If a nation is a large producer of goods that can effectively compete on the global market, this works out well.

In addition, the elasticity approach makes the assumption that a country's currency depreciation or devaluation gives it a competitive edge in the global market. Devaluation, according to Bano, Raashid, and Rasool (2014), boosts competitiveness, boosts exports, and shifts demand towards domestically produced items, which helps raise production of tradable commodities.

The fact that the elasticity technique uses partial equilibrium analysis to analyze the balance of payments, a significant portion of the overall economy, has been one of its most notable weaknesses. As a result, it is criticized for neglecting the relationships between comparable commodities, prices, demand, and supply. The Keynesians also criticise the elasticity analysis of the balance of payments for disregarding the net multiplier effects of changes in import expenditure associated with changes in both export proceeds and spending on domestic and

exportable commodities. It explicitly assumes that any improvement in trade balance following devaluation is matched by savings in the form of accumulation of foreign exchange reserves and that the associated accumulation of foreign exchange has no feedback on the real economy.

Absolute Cost Advantage

The absolute cost advantage theory of international trade was developed by a British economist Adam Smith often referred to as the father of modern economics in his seminal work, the wealth of nations, published in 1776. This theory came out as a strong reaction against the protectionist mercantilism views on international trade. Adam Smith encouraged the importance of free trade as the only assurance for expansion of trade. Adam's theory specified that a country's prosperity should not be pre meditated by how much gold it has, but rather by the living standard of its citizens. The assumes that, labor is the only factor of production, there is Perfect mobility of labor between the sectors within a country, no mobility of labor between countries., no transportation cost and that there is free trade. The theory has been criticized for its vagueness and lack of clarity. According Ellsworth, Smith assumes without argument that international trade requires a producer of exports to have an absolute advantage. But the basis of trade is not realistic because there are many undeveloped countries which do not possess absolute advantage in the production of commodity, but they have trade relations with other countries. Moreso, the theory failed to explain the causes of trade when both countries enjoy absolute advantage in the production of at least one product.
Also, fact that transportation cost is either non-existent or insignificant, as well as that there is perfectly mobility of labor within regions in a country but not across international borders.

Comparative Cost Advantage Theory
The theory of comparative cost advantage was introduced by David Ricardo in his famous book titled ' the principle of political economy and taxation in 1817'. This theory was later polished by J.S. Mill, Marshall and others. The theory states that a country will gain from trade if she specializes in the production of specific commodity in which it uses lower opportunity cost than her trading partner. Comparative advantage arises when a country is notable to yield a commodity more competitively than another country. The theory assumes that there are only two (2) countries and they produce the same two (2) commodities, there is similar taste in both countries, the supply of labor is unchanged, all units of labor are homogeneous, labor to be the only factor of production, technological knowledge is unchanged, all factors of production are fully employed in both countries. The has been criticized on the following grounds; Unrealistic assumptions of labor as the only cost neglecting other non-labor cost which is required in production process, the theory assumed that taste is the same in both countries which is totally unacceptable because taste differs with different level of income in a country, two-country two commodity is another unrealistic model because in international trade there are more than two countries and also more than two commodities.

Empirical Literature
Ajayi and Edewusi (2020) examined the nexus between public debt and economic growth in Nigeria. The study was concerned with the effect of domestic and external debt on the economy of Nigeria from 1982-2018. In analysing this, they used the unit root, Johansen co-integration and vector Error correction model. The result of the Johansen co-integration test reveal that there is a long run relationship between gross domestic product, external debt and domestic debt. The

regression result showed that, external debt has a negative effect on economic growth both in the long-run and short run. In the long run and short run, it was revealed that domestic debt has a positive effect on economic growth.

Abdelaziz, Rim and Majdi (2019) assessed if external debt drives Investment and economic growth in 23 low-income countries. The data was analyzed using the seemingly unrelated regression model framework. A split-sample analysis was done as the countries were split into less indebted countries, which are 12 in number, and more indebted countries which make up the rest of the countries. The regression results were uninformed in both the total sample and sub-sample. External debt was found to have a negative and significant effect on Investment and economic growth.

Oluleye and Horgan (2019) investigated the impact of external sector aggregates on economic growth in Nigeria from 1980-2016. The study employed the combination of correlation analysis and error correction mechanism. The results of the study brought to bear that exchange rate had a negative and significant impact on economic growth while external debt and export had a positive and significant impact on GDP, respectively. The study therefore recommended that there should be promotion of the country's export-trade and simulation of domestic production.

Akidi (2018) examined the effect of selected external sector aggregates on economic growth in Nigeria from 1981-2016. The study made use of descriptive statistics, unit root test, co-integration test and error correction method. The outcome of the study revealed that imports, exchange rate, FDI have a negative relationship with economic growth while exports is positively related with economic growth in Nigeria. The study recommended that government should encourage export diversification, especially the non-oil sector exports.

Ahmed (2018) examined the relationship between imports, exports, domestic Investment and economic growth in Nigeria. The study employed the Autoregressive and Distributed Lag (ARDL) model and Vector Error Correction Granger Casualty test as techniques of model analysis. The empirical results showed that there is long run relationship among the variables; while in the short run, the results showed that only imports had negative effects on economic growth in Nigeria. The VEX Granger Casualty test indicated that there is a relationship among the variables. The study recommended for stringent economic reforms towards addressing the negative effect of import trade.

Sulaiman and Azeez (2012) researched into the effect of external debt on economic growth of Nigeria. The model built for the study is proxy gross domestic product as the endogenous variable measuring economic growth as a function of external debt, ratio of external debt to export, inflation and exchange rate proxy as the exogenous variables. The study utilized the econometric techniques of Ordinary Least Square (OLS) and Error correction method (ECM) for the empirical analysis. The findings from the study depicts that external debt had contributed positively to the Nigerian economy. The study recommended that government should ensure economic and political stability and external debt should be acquired largely for economic reasons rather than social or political reasons

The review of related literature revealed conflicting results regarding the effects of external sector variables on economic growth in Nigeria. These differences present a gap which this study filled by contributing to the debate using different sets of variables to examine the effects of external sector aggregates using "exchange rate, net-exports and external debt" as independent

variables to determine economic growth. Specifically, the study modified the work of Oluleye and Horgan (2019) with the introduction of net-export to capture the effect of total exports minus total imports.

Methodology

The research design adopted was the ex-post facto research method. Annual time series data were sourced from United Nations Conference on Trade and Development (UNCTAD), Central Bank of Nigeria (CBN), statistical Bulletin, World Bank Development Indicator (WDI) and National Bureau of Statistics (NBS)., covering the periods 1981-2022.

Model Specification

GDP=f (NETEX, EXR, EXD) (1)

Transforming equation (1) into a mathematical model gives:

$GDP= ao+a_1EXD + a_2EXR + a_3NETEX$ (2)

Transforming equation (2) into an econometric model gives:

$GDP= ao+a_1NETEX + a_2EXR + a_3EXD+ U_t$ (3)

Where:

F= function

ao= constant variable in the model

GDP= Gross domestic product

NETEX = net export

EXR=exchange rate

EXD =external debt

a_1,a_2,a_3,=parameters or coefficient of the independent variables (NETEX, EXR,EXD)

U_t= error term.

A Priori Expectation (Economic Theory)

On the Apriori it is expected that $a_1>0$, $a_2>0$, $a_3>0$

The linear form of the model is stated thus:

$GDP = a_0 + a_1 NETEX + a_2 EXR + a_3 EXD + e$ (4)

The estimated model can be represented in an ARDL form that allows for inclusion of long-run and short-run information.

Thus, the ARDL can be formulated as follows:

$$\Delta GDP_t = K_0 + x_1 GDP_{t-1} + x_2 NETEX_{t-1} + x_3 EXR_{t-1} + x_4 EXD_{t-1} + \sum a_1 \Delta GDP_{t-1} + \sum a_{2_n} \Delta NETEX_{t-1} + \sum a_3 EXR_{t-1} + \sum a_4 \Delta EXD_{t-1} + e_{1t} \quad (5)$$

Where:

GDP= Gross domestic product

NETEX= net exports

EXD= External debt

EXR= exchange rate

t= time frame

t_{-1}= lag period

Ko = constant term

X_1-X_4= long run multipliers

a_1-a_4= short dynamic coefficients of the regression
Δ= first difference operator
P and n = maximum lag lengths
e_{it} = white noise
∑= summation

Data Analysis and Results

Unit Root Test

The ADF root test result is presented in Table 1

Table 1: ADF unit root test results for the variables

Variable	ADF statistics at levels	ADF statistic at 1st difference	5% critical value	Order of integration
GDP	-3.204		-2.94	I(0)
NTEX	-0.706	-7.029	-2.94	I(1)
EXTR	2.795	-4.253	-2.94	I(1)
EXD	-1.394	-5.989	-2.94	I(1)

Source: Author's computation from E-views software

The results show that GDP is stationary at levels given that its ADF statistic at levels is greater than the corresponding critical value at the 5% level. The implication of this result is that GDP is integrated of order one, I(0). However, the results show that net exports, exchange rate and external debt are non-stationary because their ADF statistics at levels are less than the associated critical value at the 5% significance level. In sum, the results show that the variables are mixed integrated, thus, necessitating the application of the bounds co-integration test method.

Bounds Co-integration Test

The result of the bound co-integration test is presented in Table 2

Table 2: Bounds co-integration test results

Series: GDP NTEX EXR EXD

Null Hypothesis: No levels relationship

Test Statistic	Value	Significance level	I(0)	I(1)
F-statistic	4.431	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Author's computation from E-views software

Note: k denotes the number of explanatory variables

The results show that the computed F-statistic (4.431) is greater than the upper bound critical value (3.67) at the 5% significance level. This finding necessitates the rejection of the null hypothesis of no co-integration. In other words, the results show that GDP has a long-run relationship with net export, exchange rate and external debt. The evidence of long-run relationship among the variables is interesting as it provides the basis for estimating the ARDL model.

ARDL Short and Long run results

The estimation of the ARDL model followed the evidence of mixed integration and co-integrated series. The results are presented in Table 3.

Table 3: Short and long run results

Dependent Variable: GDP

Short run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.327027**	0.145963	-2.240475	0.0324
D(NTEX)	-0.012181	0.019112	-0.637375	0.5286
D(EXR)	-0.076017*	0.039819	-1.909076	0.0655
D(EXR(-1))	0.053391	0.042044	1.269862	0.2136
D(EXD)	-0.127749**	0.057311	-2.229059	0.0332
CointEq(-1)	-0.375626**	0.158418	-2.371104	0.0241

Long run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.

NTEX	-0.032429**	0.014413	-2.249982	0.0341
EXR	-0.019724	0.029541	-0.667702	0.5093
EXD	-0.093036***	0.033231	-2.799675	0.0124
C	11.53357	8.258635	1.396548	0.1725
Adjusted R-squared	0.568323		Prob(F-statistic)	0.0031

Source: Author's computation from E-views software

Note: ***, ** and * denote significant at 1%, 5% and 10% respectively

The results show that the first lag of GDP has a negative effect on the current GDP in the short run. This is statistically significant at the 5% level given that the corresponding probability value of the estimated parameter is less than 0.05. This finding indicates that GDP growth in the previous period can be relied upon to predict future changes in GDP growth. The results further show that net export is negatively affected GDP growth in the short run. The short-term negative effect of net export on GDP growth is not statistically significant at the 5% level given that the corresponding probability value of the estimated parameter is greater than 0.05. However, it was found from the long run results that net export has a negative and significant effect on GDP growth in the long run.

Similarly, evidence of a negative effect of exchange rate on GDP growth was established in both short and long run. The effect of exchange rate on GDP growth is not significant at the 5% level based on the fact the estimated parameters are associated with probability values which are greater than 0.05. In addition, the results show that external debt has a negative and significant effect on GDP growth in both short and long run. This highlights that the increase in external borrowings has not translated to economic growth in Nigeria. The error correction coefficient (-0.3757) is negative and significant at the 5% level, indicating that about 37.57% of distortions from long-run equilibrium will be adjusted each year. Therefore, it would take less approximately three years for the long-run equilibrium to be restored. The adjusted R-squared (0.5683) showed that 56.83%of the total variations in GDP growth are jointly explained by changes in the explanatory variables. This finding provides enough evidence that the model is a good fit. In addition, the probability value (0.0031) of the F-statistic is less than the significance level of 5% (0.05), thus providing significant evidence for the statistical reliability of the estimated GDP growth model.

Post Estimation Tests

The post estimation tests results are presented in table 4

Table 4: Post-estimation test results

Test Type	Null Hypothesis	Test Statistic	Probability value	Decision
Breusch-Godfrey Serial Correlation LM Test	H_0: Serial independence	3.6055	0.1648	Accept H_0
Breusch-Pagan-Godfreyheteroskedasticity test	H_0: Homoscedasticity	7.608	0.4726	Accept H_0
Normality test	H_0: Normal distribution of residuals	4.69	0.0954	Accept H_0

Source: Author's computation from E-views software

The post-estimation test results for the GDP growth model show that there is no evidence of serial correlation given that the probability value (0.1648) of the Chi-square statistic of the Breusch-Godfrey Serial Correlation LM Test is greater than the significance level of 5% (0.05). The Breusch-Pagan-Godfrey heteroscedasticity test also provided significant evidence to reject the null hypothesis of no heteroscedasticity based on the fact the probability value (0.4726) of the test statistic is greater than the significance level of 5% (0.05). In addition, the results showed evidence of normal distribution of the residuals in the estimated GDP growth model given that the test statistic (4.69) is associated with a high probability value (0.0954) which is greater than 0.05.

Conclusion

The crux of this study was to examine the effect of the external sector aggregates on economic growth in Nigeria. The rationale for this investigation is based on the recognition of the important role external sector in driving economic growth in developing economies including Nigeria. Thus, the effects of net exports, exchange rate and external debt on GDP growth were examined during the study period. The findings show that net exports contributed negatively to GDP growth in both the short and long run. This explains that the increasing level of imports over exports tends to undermine the goal of economic growth. The results further show that the exchange rate negatively affected GDP growth, indicating that an increase in the exchange rate or depreciation of the naira reduces the potential for economic growth. In addition, the results show that external debt significantly reduced the economy in both the short and long run. Given the findings, this study concludes that the external sector has not offered the expected and desired opportunity for economic growth in Nigeria.

Recommendations

1. Policymakers should ensure the expansion of the export base to deepen the net exports and create more opportunities for economic growth in Nigeria.
2. The CBN should strengthen efforts to stabilize the naira by pursuing a consistent and realistic exchange rate policy capable of stimulating economic growth in Nigeria.

3. The government should ensure that the funds borrowed from external sources are channeled to capital investments to create more opportunities for economic growth in Nigeria.

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